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Abstract: The transition to a decentralized renewable energy system requires the transformation of communities. Increasingly, citizens become 'prosumers' and pool their resources to start a local energy initiative. In this paper we present an in-depth study of new networks that recently developed, which challenge the politically established way of centralized decision-making on energy resources. Motivations behind this development are to promote sustainable energy production, to keep financial resources in the community and to employ democratic governance of energy production and supply. Furthermore, we study how these co-operations are linked to local, regional and national networks for community energy, such as traditional environmental movement organisations and village support organisations.

We view this phenomenon from two perspectives: Actor-Network Theory (ANT) and Social Movement Theory (SMT), to allow a dynamic analysis of collective strategies.

We conclude our paper with a discussion of the obduracy of the energy system and how it is challenged by new connections between communities and global networks, by new types of energy providers that are rooted in social networks. Furthermore, we draw attention to the way community energy networks provide a social innovation in order to realize a decentralized and decarbonized energy system.

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Contribution to Special Issue: Energy transitions in Europe: Emerging challenges, innovative approaches, and possible solutions

Title: Challenging Obduracy: how local communities transform the energy system

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Abstract

Arguably, the transition to a decentralized renewable energy system requires the transformation of communities. Increasingly, citizens become 'prosumers' and pool their resources to start a local energy initiative. In this paper we present an in-depth study of new networks that recently developed, which challenge the politically established way of centralized decision-making on energy resources.

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1. Introduction

In the EU concrete targets of renewable energy production are set; for the Netherlands a goal of 14% share of renewables in 2020 is adopted by the present government. In a European perspective the Netherlands is very much in the rear-guard with only 4% of energy production from renewable sources.¹

The transition to a sustainable energy society entails a transformation of communities and neighbourhoods; this process includes the retrofit of existing buildings and local production of renewable energy. Many cities, towns and villages have already put together ambitious visions about how to become energy neutral, zero-emission or low carbon. Added to this is the ambition of many citizens to organize the governance of energy production on a more democratic basis; they contend that the future energy system should not only be sustainable, but also decentralized and democratically governed.

This could signal a trend contrary to developments in the past decades, where governance of energy production in the Netherlands has gone in the opposite direction, from the hands of local and regional governing bodies to international companies, as Wolsink describes.¹

In our research we investigate the recent attempts of local communities to challenge the present energy system and to find new ways of organising and governing energy production. In this process they have to overcome economical, technological, political and physical constraints or 'obduracies'.

In the literature we find that citizens are often framed according to their acceptance of or resistance to renewable energy²⁻⁴. Research questions include if citizens are willing to take part in government programmes for energy efficiency, to install new equipment in or on their houses, or to choose renewable energy when offered this option by their provider?⁵. Stern draws our attention the fact that citizens can influence government policies through acceptance, acquiescence, or resistance of changes in the energy system. Furthermore, he calls for more research into households as energy producers⁶. Resistance to sustainable energy, i.e. in the case of the siting of windmills is another widely studied phenomenon, where concepts such as procedural justice^{7,8} and NIMBY-phenomena are being discussed⁹.

However, in the current energy system the possible roles of consumer-citizens are extended¹⁰. Already in 2007 Walker and Cass present 10 roles, where the traditional passive consumer is only one option for engaged citizens. Active consumers can select their own provider and choose their preferred energy source, such as fossil or renewable. With the installation of PV-panels they become co-producers or 'prosumers' of energy. Prosumers appear to share a pro-environment attitude^{11,12}. The Energiewende in Germany increasingly shows the dramatic social changes brought about by a large number of individual and small PV installations, in a relatively short period of time¹³. Furthermore, small biomass, heat pumps and solar thermal installations are appropriate technologies for the individual prosumer who wants to become more independent from centralized energy supply. Not surprisingly, the existing power companies are reacting on this development in several ways, in order to influence policies according to their interests, as shown by Kungl¹⁴ and Hirschmüller¹⁵.

Another new role for citizens is to set up or become a participant of a community energy initiative. This type of bottom-up transition activities signal active involvement of citizens in the production

¹ [http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Share_of_renewables_in_gross_final_energy_consumption,_2012_and_2020_\(%25\)_YB14.png](http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Share_of_renewables_in_gross_final_energy_consumption,_2012_and_2020_(%25)_YB14.png)

and distribution of energy. Araujo points to the relevance of researching bottom-up change in the area of (energy) policy and governance, so as to expand on studies after market-based and regulatory approaches¹⁶. Seyfang, Walker and others have researched community energy for the UK¹⁷⁻²⁰. In Germany more than 700 cooperative companies were registered in 2012²¹. These cooperatives are embedded in communities, and are active traders in renewable electricity. Sagebiel et.al., who carried out an online Choice Experiment in Germany, report that transparency, share of renewable energy and (to a lesser extent) democratic control are important aspects for consumers, who on the whole exhibit a considerable Willingness-to-Pay for renewable energy. Since 2010 a wave of energy initiatives has emerged in the Netherlands, following examples in Germany and the UK. In 2014 500 such initiatives have been counted in the Netherlands (www.hieropgewekt.nl). These initiatives are actively engaged in promoting decentralized sustainable production and have been reported on by Arentsen, Hoppe et al, Van der Schoor & Scholtens²²⁻²⁴. Comparative case studies have been executed by Oteman et. al.²⁵ North investigates climate activism in the UK²⁶, analysing demonstrations as well as grassroots activities from Social Movement Theory (SMT).

To support each other local initiatives unite in networks on varying geographical scales. Regional and national networks on community energy are reported on by Parag, Seyfang and others, primarily for the UK²⁷⁻²⁹. How local initiatives support each other in various ways in the region of Oxfordshire is investigated by Parag²⁷, who identified a myriad of supportive relationships between organisations both formally and informally connected to each other. Parag further describes the important role of middle actors for socio-technical change, with three case studies in the UK²⁹. Hargreaves et. al. discuss the role of intermediaries in the support and development of community energy initiatives.³⁰ They pose that grassroots innovations, which are 'those that challenge and often attempt to replace existing and unsustainable sociotechnical systems', consist a research field that could be further developed. However, in the view of Arentsen²⁴, these grassroots innovations will be limited to a niche existence. In Germany we identify several countrywide networks on community energy, such as 100% Nachhaltige Energie Regionen^{13,31}.

In the Netherlands, we observe a diversity of networks, where community initiatives co-operate and get support. These networks are developing at a fast pace, new networks are created, and existing networks merge. This paper investigates the new networks that have been formed in three northern provinces of the Netherlands, which we take as a representation of a more general phenomenon. How are the various roles of citizens as mentioned above connected in networks and do these networks in any way challenge the existing energy system. A related question is if these networks attempt to provide an alternative to the present energy system, or in other words, do they constitute a grassroots innovation?

We organized our research as a case study³², especially focusing on the regional networks that have been formed since 2012. To this end, we have undertaken qualitative interviews of key persons, in combination with fieldwork.

With this study we aim to extend the analysis of North by combining ANT and SMT to study community energy initiatives in the Netherlands. This could advance our understanding of these institutions because we can trace regional and local networks with ANT, while following political moves with SMT. As such, this study aims to contribute to the discussion as undertaken by Seyfang et.al³³, Hargreaves et. al.³⁰, and Parag et.al²⁹.

Our study shows that the network structure we describe provides a social innovation, aiming to organize the production and distribution of energy in a democratic and sustainable way. However, it is early days for the cooperative energy company, the new cooperative has to involve more supporters and to strengthen network ties.

Our theoretical contribution is to combine SMT and ANT in the analysis of recent attempts to decentralize and decarbonize the energy system. While we used the microanalysis of ANT we also circumvented its myopia by tracing the national and regional networks that form the community energy movement.

The remainder of this paper is organized as follows. We proceed with a theoretical section where we will discuss the question if the upsurge of local energy initiatives constitutes a social movement, and the insights that SMT brings to the analysis of networks. Next we outline the methods used for the gathering of data for this paper. In section 4 the reader will find an in-depth case description of the new energy networks, in relation to related local and global networks. We first describe the background, formation and goals of the newly formed regional energy co-operations. Secondly, we investigate the linkages of local initiatives to other regional and national networks, including environmental movement organisations and village support organisations. In section 5 we discuss the findings of our case study and relate them to the literature. Section 6 concludes.

2. Theoretical approaches: SMT and ANT

To allow a dynamic analysis of collective strategies we combine two theoretical perspectives: Actor-Network Theory (ANT) and Social Movement Theory (SMT). ANT is particularly suited to describe interlinked networks consisting of human actors as well as institutions, buildings, energy technologies and infrastructures. With SMT we are able to include the issue of social conflict over the governance of energy resources in our analysis.

In the literature, we find only a few studies that explicitly take ANT as a starting point, apart from the well-known work of Walker, Hunter, Devine-Wright, Evans, & Fay³⁴⁻⁴⁰. Actor-network theory posits a flat ontology as explained by Jørgensen⁴¹, a perspective that differs from the popular multi-level perspective that is often used in the field of energy transitions. The role of technology in these socio-technical assemblages is best analysed with ANT, as it gives due attention to the non-human actors in a network. An important concept when attempting to change an existing system is obduracy, or resistance to change. In general, technical objects and human actors mutually shape each other as they interact, or in the words of Michel Callon: *'the stability and form of artifacts should be seen as a function of the interaction of heterogeneous elements as these are shaped and assimilated into a network.'*⁴² The resistance to change of the energy system can thus be investigated by following heterogeneous actors, ties and networks.

Nevertheless, there has been criticism of ANT, in that it is primarily used for micro studies. Therefore, we argue that to better understand the dynamics of these interlinking networks it could be helpful to turn to Social Movement Theory to unravel the emergence of energy co-operatives as a new phase in the history of the energy movement. Secondly, in a discussion of the script approach, Radder⁴³ maintains that due to 'the descriptivism of the STS approach, script analyses are limited to descriptions of actual technological practices'. Therefore, according to Radder, (within script analysis) 'there is no normative level that would enable a normative assessment of technologies'. In our view, this makes ANT less suitable to analyse normative projects such as the energy transition. For these two reasons we include SMT in combination with ANT.

Using SMT concepts we proceed to analyse the advent of community energy as a social conflict over governance over resources, both energy resources and (related) financial resources. We argue that local energy cooperatives provide an alternative model for the governance of energy resources.

With the adoption of Social Movement Theory we feel obliged to address the question '*does the present wave of local energy initiatives constitute a (new) social movement*' in some detail. The

first task is then to define what a social movement is, for which we first turn to Alain Touraine⁴⁵. In *An introduction to the study of social movements*, Touraine maintained that the *study of social action* rather than the *study of society* should be the main subject for sociology; therefore the concept of social movement should in his view have central importance. This concept acts as a “*bridge between the observation of new technologies and the ideas of new forms of political life*”.

Touraine defines a social movement as a special type of social conflict, which presupposes a clear definition of opponents or competing actors and of the resources they are fighting for or negotiating to take control of. He uses the concept of social movements to refer to conflicts around the social control of main cultural patterns:

“(a) *type of social conflict, whose stake is the social control of main cultural patterns, that is of the patterns through which our relationships with the environment are normatively organized.*”⁴⁶ p. 213)

To reveal the complex nature of new social conflicts, Touraine analysed the actions against nuclear energy, against “*decision makers who have the power to shape national life for a longer period of time in a ‘technocratic’ way. This action tries to foster a grass-roots democracy.*”⁴⁶ p. 217. Also in recent literature grass-roots democracy³³ is discussed in relation to community energy, as mentioned in the introduction.

SMT theorists position the activities of energy initiatives in the framework of the environmental movement. According to Melucci, another SMT theorist:

“*Conflicts are carried forward by temporary actors who bring to light the crucial dilemmas of a society. The conflicts I describe here, which do not exhaust the range of social conflicts, concern the production and appropriation of resources that are crucial for a society based on information. These same processes generate both new forms of power and new forms of opposition: Conflict only emerges insofar as actors fight for control and the allocation of socially produced potential for action.*”⁴⁶ p. 219

Drawing on Touraine and Melucci we argue that what is at stake here is the normative organisation of our relationship with energy as a major resource. This social conflict around the production and appropriation of energy resources fosters new forms of organisation and governance of sustainable energy production.

For an SMT approach to network dynamics we again refer to Melucci:

“*Two features of these networks can be identified. First, a movement network is a field of social relationships where, through negotiation among various groups, a collective identity is structured. In these social fields, the orientations and constraints of action are defined and redefined within the solidarity networks that link individuals together in their daily lives. Second, a movement network is a terrain in which identity is recomposed and unified.*”⁴⁶ p. 224

The networks that are formed in the community energy movement can in our view be fruitfully analysed using SMT concepts. By adding methods from Actor-Network Theory -following the actors- we aim to provide an in-depth analysis of dynamics in the energy networks. In the Discussion section (4) we return to this topic.

3. Case description: new energy networks in the North of the Netherlands

In the Netherlands more than 500 local initiatives seek to reshape the energy system in the face of constraints embedded in technical, cultural, economic and political traditions. The aims of local energy initiatives in general are to promote sustainable energy production on the local level, to enhance local social cohesion, and to reinvest profits of energy sales to the local community.

Furthermore, many initiatives have formulated visions about the transformation of their village, town or neighbourhood into a low carbon community. The majority of local initiatives are organised on a democratic basis, with cooperatives as the preferred organisation model.

The development of this social movement recently shows a pattern of clustering in regional networks, without diminishing the local autonomy of local energy initiatives in any way. In the region under study we find three networks, organized along the lines (boundaries) of provinces. Together, these three Northern networks founded their own co-operative energy provider.

We organized our research as a case study³², aiming to understand the development and activities of regional networks from an inside perspective. A case study is 'an in-depth exploration from multiple perspectives of the complexity and uniqueness of a particular project, policy, institution, program or system in a 'real-life' context' (Simons 2009, cited by Thomas⁴⁷ p. 21. Following Yin⁴⁸, we used our case study to search for conceptual patterns and categories.

To understand the regional networks, we have undertaken qualitative interviews of key persons, in combination with fieldwork. We also studied websites, documents and other communications of these groups. This information was used to chart the landscape of networks on a regional as well as a national geographical scale.

In this section we first describe the formation, organisation and goals of the new regional energy co-operations in the North of the Netherlands. Secondly, we investigate the linkages of local initiatives to other regional and national networks, including environmental movement organisations and village support organisations.

3.1 Development of a co-operative energy provider

3.1.1 Foundation

Local energy initiatives often actively promote the use of sustainable energy; many initiatives offer green energy themselves. A much-used formula to organize this is that the local initiative agrees to a reseller's arrangement with an existing sustainable energy provider, where the members of the initiative become a client of this provider. In return the local initiative gets a yearly remuneration for the clients they deliver.

Earlier it was also possible (although not formally allowed) to sell energy through a white label construction, where the loco could sell energy under its own name, using the energy supply license of an existing energy provider. At the end of 2012 one of these commercial green providers, the Dutch branch of Trianel, went bankrupt. Furthermore, the Dutch Authority on Consumers and Markets (ACM) no longer allowed the white label construction. This caused a considerable stir in the world of local energy co-operations, as the model of providing green energy as well as getting a return for their local coop was under threat.

"So our plans to deliver energy to our local initiatives through such an energy provider, these (plans) fell apart."

Local cooperatives in the Netherlands either had to find another provider, or apply for an independent supply license. Different regions in the Netherlands chose their own paths; here we only concern ourselves with developments in the North.

"So, we asked ourselves, are we going to look for another provider, or shall we work on the foundation of our own energy company "

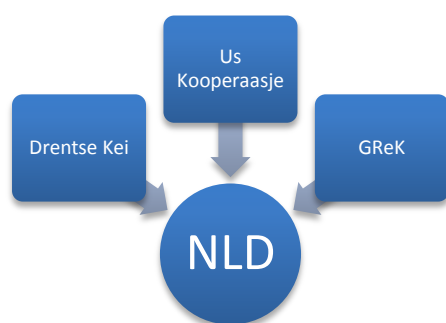
Coincidentally, initiatives in the northern provinces were already well under way to unite in regional networks. These networks-in-the-making wanted to source their energy from a sustainable provider. They quickly realized that creating your own provider could have benefits.

“Obviously, this has a number of benefits, being in charge of the organisation yourself, but also from a financial perspective. Profits won’t leak away. So this was actually even better. “

Thus, the bankruptcy of the existing provider, together with a change in regulation concerning the white label construction, triggered the decision to found a wholly new energy provider.

“so when Trianel went bankrupt and the opportunity of starting our own company presented itself”.

The regional networks together with their energy provider have created a democratically governed structure. The NLD is thus the ‘daughter’ organisation of the networks, as is illustrated in figure 1.



3.1.2 Goals

Three main goals of the new model can be identified as follows: realisation of sustainable goals, keeping money in the region and governance of energy resources.

1. First goal of NLD is the promotion of local sustainable energy production and consumption. The profits are available for local cooperatives to invest in local sustainability projects.

“Goals of the local cooperation have a central place, such as an orchard, a solar park, a windmill, or a new installation for the swimming pool. With the NLD, with this concept, we can make money and this will trigger an acceleration...’)

“It works as a flywheel for our goals, to stimulate local initiatives in Friesland’.

2. Initiators of NLD Energy want to keep more money in the region as well as exert greater influence on the operations of the energy provider. The view of initiators is that the millions of euros consumers in the region spend on their yearly energy bills are leaking away to other countries. Thus profits are not used to generate economic development in the region, and not invested in sustainable goals.

“You’re talking millions, that we throw away together. Millions that are invested in German BMWs or Swedish Volvo’s...”

“Especially because it is our intention not to let money be diverted to shareholders or other people elsewhere, the whole point is to keep money fully in the Northern region. “

3. Governance of energy resources. Decisions to invest in local sustainability are up to the community energy co-operations themselves.

“Because the real argument, to supply your own energy and to decide yourself how your energy is produced, how it is purchased, where it is purchased, (...) furthermore, keeping profits in the region, preventing that they leak away to foreign countries, but instead are invested in your own neighbourhood, where you have a say in things.”

3.1.3 Getting started

The foundation of this new energy provider was ‘a hell of a job’ for a network that at the time was still in the making and relied primarily on volunteers.

After much volunteer work the newly founded northern sustainable energy company got its license on 1 April 2014. One of the umbrellas expressed his feelings of nervousness when the license came through:

“When we got our supply permit, April 1st 2014, we did not throw a party, no champagne, no cake, because we thought, now we have to deliver! And if we mess it up, than it’s spoiled for the Netherlands for the next 15 years.”

The NLD started its work on July 1st, after three months of installing an office. At the time of the interview the cooperation had been operational for seven months. The NLD presently has a small office with four employees, including a director. However, in order to be able to create a more resilient organisation, NLD has to grow to at least 5000 or 6000 clients.

NLD is a profit-for-purpose firm, meaning that any profits will be returned to the local cooperatives, which decide how it will be used.

“We are a profit-for-purpose company, which means that nothing remains in the central organisation, all the profits are distributed over our participants, not only the saved marketing costs, but also profits at the end of the year.”

Under Dutch law NLD has to accept every consumer that chooses to become a client of NLD. If applicable, this client can indicate which nearby cooperative the remuneration has to be paid out.

The co-operative structure of NLD is seen as unique for the Netherlands, although a comparable organisation exists in the province of North Holland, called DE Unie (Duurzame Energie Unie) However, according to our interviewees DE Unie is primarily a producers’ organisation, whereas NLD is a consumers network. Furthermore, NLD limits itself to the three northern provinces, whereas DE Unie is in principle a national organisation.

“We are focused on Friesland, Groningen and Drenthe, that’s it. This is very consciously done, in order to keep the span of control limited, so that we can be the decent organisation we want to be.”

NLD is actively trying to buy electricity produced in the region.

“Of course we try to purchase in the North. You can imagine that every village hall, which has enough room for an array of solar panels, can become a supplier of solar energy. We want to buy and sell locally. Ameland has a solar park that has enough capacity to supply the energy to all our clients on the island, so that would be brilliant, that we purchase their energy and sell it immediately to the people from Ameland themselves.”

“I think we have the right formula to keep finance and energy local, to close the energy loop and to close the financial loop on a local level.”

3.1.4 Future visions: a co-operative network structure

The present role of energy distribution networks is difficult to influence in the Dutch context, but it is the dream of NLD to experiment with cooperative network organisations. In their view, this has benefits for feelings of ownership, financial benefits, governance, but also for the optimization of energy exchange on the local level. Experiences in Germany are mentioned as an example, where apparently fewer obstacles for local cooperative networks exist.

“In my opinion it would be worthwhile to experiment in the Netherlands with network-cooperatives, so as to keep energy networks under governance of local cooperations.”

“For these experiments, rural areas are the most appropriate, because then you can offer solar parks or biomass-farmers a new perspective.”

3.2 Regional networks

3.2.1 Supporting local cooperatives

NLD is organized as a cooperative with three members: the regional energy networks in the three provinces, respectively called Us Kooperaasje, Groninger Energie Koepel (GrEK) and Drentse KEI. These provincial networks each have their own organisation structure, statutory description, members, website, and board.

“It was a very clever move to create three umbrella organisations, because you have three provinces, with different DNA, different political priorities, (..) who each want to make sure that money will stay within their own provincial boundaries.”

The role of the provincial umbrellas is to support the local cooperatives with their activities, but also to guarantee that the money is invested in a sustainable way. The NLD has no say over local projects.

“They support the local cooperatives, they perform monitoring, policymaking, sustainability checks... Through the obligatory membership of a provincial cooperation we hope to guarantee that the local cooperation spends the money well.”

3.2.2 Lets' get started: Us Kooperaasje

The development of the regional cooperation in the province of Fryslan started with a few people who had been thinking for a longer time about ways to stimulate local energy initiatives, and who thought ‘just lets’ get started’. They first founded a ‘foundation for the foundation of ...’, which is a usual approach to get something off the ground.

“Then there were a few people who said, well, we just have to get started. So they thought about an organisation structure, created a board, found a few people who were willing to invest some time and effort.”

The next step was to apply for provincial funds for legal procedures, a statutory description and the development of a website. In March 2013 the Frisian cooperation Us Kooperaasje, meaning ‘Our Cooperation’ in Frisian, was founded.

The size of the organisation is limited: a half time employee, a board with five members and a group of volunteers.

1 “We have a half time employee, who is the only one that get’s paid, he supports local initiatives
2 with the set up of a local cooperation. But in the end we do it all together, it is just a question
3 who is able to free up enough time to do something.”

4 The team is described as very active and close-knit:

5
6 “We work as a very close-knit team, where some are on the board but also very active in the field.
7 So they visit all kinds of villages. The team consists of 10 or 12 very active people. “

8
9 Interviewees recognize the need to expand the organisation, which in their eyes makes paid
10 employees a necessity. Therefore they are actively looking for ways to generate more funds.

11
12 “But to really expand your activities, you need some income. To pay people on a sober, but
13 decent level.”

14
15 There is no physical office; the board has different locations where they can meet. They are guest
16 of several friendly organisations, who provide a temporary place to have meetings. But this is
17 considered of low importance.

18
19 “The office is negligible, we always have a place where we can meet, in different locations. Even
20 our postal address changes regularly, I’ve already forgotten which is the last one. (..) Actually,
21 almost everything is done digitally. But you need a place to sit dry, to plug in a computer and to
22 have meetings. “

23
24 Some board members are at the same time active in local initiatives. Others have a background
25 in the energy sector. The chairperson is mayor in one of the municipalities in Fryslan and as such
26 brings in a large network.

27
28 “The team consists of people who know the energy sector, or have lots of experience with energy
29 cooperations, so we are all experiential experts. And there is someone who works with the
30 municipality, but is granted one day a week to work for Us Kooperaasje.”

31
32 The goal of the provincial network is to support local initiatives with practical advice, to enlarge
33 the network and to share knowledge. The co-op is founded by and works for the local initiatives.

34
35 “The goal of Us Kooperaasje is to support the local initiatives, to foster the growth of the
36 network and to stimulate the sharing and spread of knowledge.”

37
38 Local cooperatives can apply as formal member of Us Kooperaasje if they have set up their local
39 organisation, have a statutory description and a plan of work.

40
41 The local cooperatives as mentioned before work with a reseller’s arrangement. Yearly they
42 receive €75 per client. It is entirely up to them how they spend this money, although there should
43 be a link with sustainability and energy projects.

44
45 “This money they can invest in the manner the local cooperation wishes, they decide with their
46 own local members, we are not responsible for that. Naturally, the idea is to use the money to
47 stimulate local sustainability projects.”

48 **3.2.3 Drentse KEI**

49 In the province of Drenthe the regional umbrella is called Drentse KEI, where KEI is used as
50 abbreviation for Koepel Energie Initiatieven, meaning umbrella of energy initiatives. In Drenthe a
51 lot of stones from the ice age are found, such a stone is called a *kei* in Dutch, hence the name.

1 Drentse KEI has a board with five members; it has no office and no employees. All work is done
2 voluntarily. As yet, Drentse KEI has fewer members than its Frisian counterpart. One of the
3 reasons for this lies in the mentality of the people from Drenthe.

4 “in Drenthe we have the problem that people from Drenthe are inclined to wait and see – for a
5 very long time. So we move very slowly.”
6

7 It is difficult to get the message across, interviewees tell us. Why would clients choose for NLD?
8 The arguments include climate change as well as price and service with traditional providers. But
9 it proves difficult to get the ‘real argument’ as they call it, across. This argument concerns the
10 governance of energy resources, as discussed above in section 3.1.2.
11

12 In order to get resellers arrangement with NLD, a loco has to become a member of the Drentse
13 KEI, for €250. In return they receive a certificate.
14

15 “Cooperatives that become a member of KEI buy a membership certificate for €250. This is
16 enough for us to pay for small things (..).
17

18 It is stressed that the umbrella is democratically organized. The local coops also should organize
19 themselves on a democratic basis.
20

21 “It cannot be a foundation, because a foundation isn’t democratically organized. So they need to
22 be a union or a cooperative”
23

24 The goal of the provincial network is to support local initiatives with practical advice.
25

26 “But the local cooperations have to do the work, they have to learn, that’s why there have been
27 several instruction meetings’ ”
28

29 “We have to represent their interests, we have to help them with legal procedures, we have to
30 give fiscal advice.” (KEI)
31

32 The local cooperatives have to decide themselves how the money will be spent, in Drenthe
33 interviewees observe that this is difficult on a scale where several villages belong to the same
34 cooperative, for example when a coop is organized on the scale of a municipality.
35

36 “It is too large, here is someone from Luttingerveld, hier is someone from Een, here is someone
37 from South- well whatever, and they don’t even know how these villages look like, so they can’t
38 decide when Luttingerveld says “We need something for our village hall, maybe the cooperation
39 can pay for that? - if that is a reasonable request.”
40

41 **3.2.4 Groninger Energie Koepel: ‘wie doun’t zulf’**

42 In the province of Groningen the number of local energy initiatives is rising rapidly. From only five
43 members in 2012 now there are seven full members and another eight are in preparation stage.
44 The name simply refers to Groningen as province, but in the communication the Groninger
45 language is regularly used, to provide a strong link to the cultural identity in Groningen. The
46 slogan ‘we doun’t zulf’ means ‘we do it ourselves’ in the local language.
47

48 GrEk was started somewhat later than the other two umbrellas, because the existing strong
49 cooperation Grunneger Power long tried to fulfil a coordination role themselves, which slowed
50 down the development of a provincial umbrella.
51

1 “Then they concluded that the scale of operations was too small to create a viable organisation,
2 that they needed to scale up and to create an energy wholesale business. Then it would be
3 possible to save profits to invest in local initiatives.”

4 The Groninger Energie Koepel has a vision where the province is able to provide for its own
5 energy needs.
6

7 “Our vision is that in the province of Groningen local village organisations and energy
8 cooperations work towards an independent fossil free supply of energy.”
9

10 In order to reach this goal local initiatives have to be supported.
11

12 “To achieve that, we try to stimulate, encourage and link local initiatives to get started.”
13

14 The organisation of GrEK is rather low profile; so far the only employee is a full time volunteer,
15 who is assisted by students doing their internship. Board members also fulfil many tasks, such as
16 representing the organisation in meetings. Board members are based in different regions and
17 bring in their own networks. Furthermore, the majority of board members are active in one of the
18 local cooperatives.
19

20 “Increasingly, you find out that everyone has his own network in the region, so it is natural that
21 board members are active in their own region, not only as a member of the board but also in the
22 local cooperation.”
23

24 “Furthermore, you notice that every region has its own characteristics and its own mentality.”
25

26 In GrEK several initiatives are organized as a working group under the umbrella of the village
27 organisation. This is seen as an important asset, because the village organisation has a broad
28 range of members, whereas a dedicated energy cooperative runs the risk of being stigmatized as
29 a green organisation, which can lead to an isolated or marginal existence.
30

31 “We chose to align ourselves to the village organisation, (...) which means that a broad range is
32 almost guaranteed.”
33

34 “Whereas – as I gather from Frisian experiences – there are villages with small organisations only
35 consisting of sustainably oriented people, this can lead to an isolated existence.”
36

37 Furthermore, the coop has to remain true to a broad definition of sustainability, where economic
38 or social aspects are as important as environmental benefits.
39

40 “Not only look at green issues, but also take economical benefits and social aspects on board.”
41

42 The issue of geographical scale is mentioned as very important, comparable to the situation in
43 Drenthe. Coops that are organized on the level of a municipality run the risk of being too far from
44 people’s needs, or even to encounter age-old conflicts between villages.
45

46 “Scale is in my view a decisive factor, if you choose a scale that is too large, it is difficult for
47 people to identify with the club.”
48

49 3.3 Volunteering

50 3.3.1 Resellers arrangement

51 Local cooperatives work with a reseller’s arrangement, comparable to the earlier contracts with
52 traditional energy suppliers. A reseller gets €75, - a year for every client. This represents the
53 marketing costs that NLD doesn’t have to spend, because the local cooperatives do this work.
54

Furthermore, local cooperatives get a percentage of the yearly profits. For an individual cooperative the total amount of yearly income can become rather substantial.

“Village cooperations are almost always dependent on small subsidies and contributions, however, we provide a model to make money, to create a substantial stream of money to the local community”

“For example, we have a thousand clients on Ameland, so €75.000 a year will go to the Amelander Energy Cooperation.”

To get a resellers contract with NLD it is obligatory that the loco is a member of the provincial network.

“If you want to be a reseller for NLD, you have to be a member of a regional umbrella. Secondly, you need to sign a resellers arrangement with NLD, which is a contract between the local cooperation and the NLD.”

There are differences in the amount of local cooperatives and clients the umbrellas bring to NLD, reflecting to the different stages of development of the respective organisations. NLD had 42 local cooperations enlisted as resellers as of February 2015.

3.3.2 Time and effort

It is a rather busy existence for the active members of the community energy movement. Organisation size is very limited, only the Frisian cooperation has a temporary employee. In the interviews the constant stream of meetings is mentioned. One type of meeting is the local information meeting. Volunteers mention they visit a village information meeting twice or three times a week. Furthermore, there are meetings organised for information sharing, instruction or otherwise. Interviewees are sometimes worried about the workload for volunteers.

“People who for next to nothing work days, weekends and even nights to get things done.”

Although there are views that a modern organisation would be preferable, in practice board members invest a lot of time and effort. “You just have to do it together.”

3.3.3 Knowledge

It is stressed that a lot of knowledge is available in the local cooperation's and the network as a whole.

“You have to realize that a lot of knowledge is available, also locally. If you think that knowledge is only in the heads of a few specialists, you are terribly mistaken.”

“So we depart from the strengths of the local community, (..) Then we investigate what is missing and if we can supply those things within the network, and sometimes we still need some expertise, for which we then involve other parties.”

3.3.4 Outreach

Repeatedly, concerns were voiced about the outreach of the local cooperatives to a larger part of the community.

“We are now working to develop our marketing strategy, to increase the volume of clients”

1 “What I want to know is, whom do we not reach? Why are people so difficult to convince, can we
2 improve our arguments, our story? Because we want something, we believe in it, but we don’t
3 succeed in selling it properly.”

4 3.4 Interlinkages with pre-existing networks

5 In this section we discuss the linkages with pre-existing regional and national networks.

6
7
8 In the provinces existing support networks are organized along the lines of provinces and topic
9 areas. In all Dutch provinces there is an environmental umbrella organisation, uniting and
10 supporting local environmental groups. These organisations usually have a central office with
11 employees working on specific environmental subjects, such as transport, energy, nature
12 conservation, waste management or spatial planning. Furthermore, they attract funds for specific
13 projects, such as setting up a service point for local cooperatives. The environmental umbrella
14 organisations are united on a national scale in the Stichting Natuur en Milieu.

15
16
17 On the other hand there are provincial organisations that are dedicated to support organisations
18 in (small) villages. This can range from financial advice for the exploitation of the village hall to
19 exchange of ideas on local care, village gardens etcetera. As many local cooperatives started out
20 as an informal working group of a village organisation, the provincial village support organisations
21 received many calls for support on the setup and running of an energy initiative. On a national
22 level the ‘Network Sustainable Villages’ was founded, which supplies villages with an interactive
23 website as well as a platform for meetings.

24
25
26 So the landscape of organisations is roughly organized in two pillars, one stemming from
27 environmental concerns and the other from village perspectives. On a provincial scale these
28 support organisations often work together, to increase the total level of support. On the other
29 hand, the organisations compete to attract funds for their projects.

30
31
32 Looking at this provincial network landscape we notice that the existing networks undertook
33 projects such as *Lokale Energie Voorwaarts* and the *Energiewerkplaats*. They also organized
34 numerous meetings, which served as an important platform for local cooperatives to meet and
35 share knowledge and experience. The relation of the new networks with the existing ones is
36 geared at cooperation and profiting of reciprocal strengths. However, conflicts could arise around
37 the provision of money to existing organisations, leaving the new networks without funds.

38
39
40 On a personal level we observe structural as well as incidental links between the networks. The
41 cooperative structure of the provincial umbrellas and the NLD means that representatives of local
42 cooperatives can be a member of the board of the umbrella as well as the NLD. Furthermore,
43 some citizens from the Northern region are active in one of the national networks. For example,
44 one of our interviewees is a member of the loco in the municipality of Noordenvelde; he is also a
45 member of the board of Drentse KEI, the provincial umbrella in Drenthe; for Drentse KEI he is on
46 the board of the NLD; and on top of that he is board member of E-decentraal, one of the national
47 networks. This combination of volunteer positions links networks from local to national.

48
49
50 National networks have been set up at the beginning of the surge of local cooperatives, such as
51 E-decentraal. However, at the moment the subsidies are being discontinued, so the organisation
52 is reorienting itself. The role of the national networks is primarily geared at lobbying and
53 organizing national conferences for information sharing. Regional networks do not spend much
54 time on that; they are far too busy with daily concerns.

3.5 Table

Regional Network	Region/ Province	Membership (type)	Mission
GReK (Groninger Energie Koepel)	Groningen	Local initiatives	support
Drentse Kei	Drenthe	Local initiative	
Us Kooperaasje	Friesland	Local initiative	
NLD	Groningen, Friesland, Drenthe	Regional networks	Providing sust. energy
Milieufederatie Groningen	Groningen	Environmental groups	support
Milieufederatie Drenthe	Drenthe	Environmental groups	
Milieufederatie Fryslan	Friesland	Environmental groups	
Doarpswurk	Friesland	Village organisations	
Vereniging Groninger Dorpen	Groningen	Village organisations	
BOKD	Drenthe	Village organisations	
Energiewerkplaats	Friesland	Project of environmental group	

4. Analysis

The initiatives in the area under study are actively strengthening their regional networks, linking the mutually founded cooperative energy provider (NLD) to local energy coops (local cooperatives). For local cooperatives this means they get a comparable remuneration from the NLD as they used to receive from the commercial sustainable energy providers. Additionally, any profits will be divided over the local cooperatives.

There are some differences in the approaches chosen by the respective regional organisations, partly depending on the provincial or other support the regional network was able to get.

The structure as a whole is unique for the Netherlands. In other provinces the local cooperatives are working together on a less formal basis. NLD is (so far) the only energy provider in the Netherlands that is founded and governed by local initiatives. Comparable providers, such as De Unie are producers' coops, not consumers' coops.

4.1 Democratic control of energy policies

In the terms of Melucci ⁴⁶ we find that the local energy movement is posing political demands for the democratic control of energy policies, as well as finding ways to realize their vision within the present regulatory framework. This aligns with the writings of Touraine and Melucci, when they claim that the basis of a social movement is a conflict over (the governance of) resources ^{45,46}.

The model of delivering sustainable energy by means of an existing (sustainable) energy provider under a white label or by means of a resellers' arrangement did have drawbacks, according to the local cooperatives. Although they received financial remunerations for the clients they brought in, initiators wanted to go a step further and create their own locally governed energy provider. However, the trigger for the decision to take this step was the bankruptcy of their former provider, Trianel and the closing down of the 'white label construction' by the market authority (ACM).

The initiators have three main goals with the new energy provider. First, they want to make sure that all profit made with energy supply will be invested in the local community in a sustainable way. Secondly, they aim to stimulate local sustainable energy production. Thirdly, they express a strong wish to have a say in the operations and investments of the energy provider.

The resellers' arrangement could not service all these demands, as energy companies have a shareholder structure. Any profits thus would still leak away to the shareholders, often located in other countries; furthermore the local cooperatives have no say in investment or other strategies of their provider.

The three umbrellas in the North chose to apply for a supply license and thereby founded an independent energy provider. The NLD is put forward as an alternative to traditional energy providers. On the other hand, the NLD has to fit in existing rules and regulations regarding energy providers.

Democratic governance of energy resources according to the initiator of NLD and its networks helps to attain several goals:

- Promotion and implementation of sustainable energy production units on both an individual and a community scale
- Keeping local spending in the local community and investment of profits in local sustainable goals
- Influence of citizens on their energy provider

The new energy initiatives aim to use other logics to structure local energy supply.

4.2 Local, but not political power

*'When the small groups come out into the open, they do so in order to **confront political authority on specific grounds**. Mobilization has a multi-layered symbolic function. It proclaims opposition against the logic that guides decision making with regard to a specific public policy'*

The networks stress that they are not political, meaning they do not want their initiatives painted in a party-political light. However, they regularly try to influence local decision making. The relation of local cooperatives with the municipal and provincial government is characterised by a certain amount of unease. For example, in Drenthe none of the municipalities is a client of NLD,

and neither are the provinces, although they expressed their sympathy and helped the foundation with a loan.

In Drenthe, only the municipality of Midden-Drenthe has a clear approach to local energy initiatives and has an active local energy policy, supported by instruments such as courses for homeowners. There is no financial support for local projects or initiatives, and the provincial fund for energy projects in practice rules small initiatives out, because of the financial threshold of €50.000 per project. In Friesland municipalities and the province have drafted lofty visions on sustainable energy, but lack capacity and instruments to put these visions into practice. In Groningen the wave of local energy initiatives is just getting off the ground, the province has installed a fund to support local initiatives.

4.3 Networks, commitment and attachments

Melucci on organisation: “individuals and information circulate through the network, and there are specific agencies (the professionalized nuclei) that insure a certain amount of unity in the hidden network, allows multiple membership; is part-time with respect to both the life course and to the amount of time it absorbs; and requires the personal commitment and affective solidarity of those who belong to it.”

From a social movement perspective we would expect personal ties between local initiatives, regional networks and national organisations. This is indeed apparent in the combination of roles that individuals take up, as we saw above with the informant from Drenthe. However, he could be the exception to the rule, as other initiatives report they are not spending much thought or time on national organisations, as they are far too busy with running their own initiative.

An earlier article on the subject of community energy²³ a conceptual model based on Law and Callon⁴⁹ was developed, where local energy initiatives were situated along two dimensions: Attachment to outside networks and Commitment of members. Initiatives with strong attachments to outside networks as well as highly committed members are expected to be able to achieve the most local results with their project. If attachments are lacking, the commitment of members is weak, or both, the initiative will have trouble to achieve the results they seek.

Applying this model on the organisations in our case study we notice the very high commitment of the actors in the networks. Not only is almost all work voluntarily done, involving a huge amount of time and effort, interviewees also hold outspoken views on the best way to organise the future energy system.

Secondly, for the local cooperatives the regional cooperatives and new energy provider function to increase the number of attachments to outside networks. The whole structure is set up to foster attachments between local cooperatives; the regional cooperative in fact is no more than a service organisation, governed by their members, the local cooperatives.

Thirdly, although national networks are known by the local cooperatives, and some members are themselves active in national networks, attachments with these organisations is not considered a high priority. According to interviewees, day-to-day work on the local level is far more important for the organisation.

Fourth, referring to local network attachments the following observation is relevant. One of the goals often expressed by local cooperatives is to enhance social cohesion in their community. However, the reverse is also true, in the sense that small cohesive communities have a greater chance of maintaining a successful local coop. If a cooperation is too large –for example if it is organized on the level of a complete municipality with several villages- runs the risk of experiencing difficulties with involving their members, and problems can arise with decisions on the budget. Small cooperatives, on the scale of one village or neighbourhood, do not have these problems. Furthermore, information meetings should preferably be held in the locality or

neighbourhood itself, because otherwise only the 'converted' will turn up. Even meetings only one village away attract less people, and from a smaller segment of the population. Connections on the local level, in the neighbourhood or village itself, are of paramount importance.

Lastly, there is the question of informal and formal organisation structures. In the article in RSER²³, one of the findings was that a more formal structure enhanced continuity. However, it seems that informal working groups, tightly connected to a general village organisation, to the regional network and to the cooperative provider, can have certain benefits. According to some interviewees these groups can reach a broader audience. Although the working group has an informal appearance, in fact formal ties are derived from the membership of the new provincial umbrella, which obliges that democratic decision-making procedures are set in place to ensure that profits are spent in line with the sustainability vision of the energy cooperative. On the other hand, it was mentioned that specialized energy cooperatives can become isolated, missing out on the broader audience a general village organisation can bring.

In the table below we present two dimensions: a dimension of scale (from individual to national) and an incremental-radical dimension.

(Table adapted to NL situation)	Prosumers	Communities	Regional Networks	National Networks
Incremental reform within existing energy policies	Reduce energy for heating and appliances Produce own electricity, grid connected Buy green energy	Local PV-groups Local cooperatives for supplying green energy New social enterprises for supply and production of energy	Provincial umbrellas for support of local coops Cooperative provider set up by provincial umbrellas	Projects for support of local coops Organisation with local coops as members
Radical reform of energy governance	Produce own, off grid Energy neutral, passive houses	Autarchy, low carbon, energy neutral visions	Long term vision: NLD servicing all households in the area.	

5. Conclusion

We conclude our paper with a discussion of challenges to the energy system by new regional networks and cooperative energy providers.

In the social movement for local energy transitions, we observe a diversity of interacting and overlapping networks linking together individual prosumers, regional providers and national lobbyists in our case study. The cooperative model is apparent throughout; the local cooperatives have to be democratically organized, together they constitute a regional cooperation in their respective provinces. The three regional cooperations in turn are the founders and only members of the cooperative energy provider. We conclude that the energy movement organizes itself

1 according to an ideological vision concerning sustainability, regional economy and democracy,
2 thereby challenging the present governance of energy resources. Therefore, the network
3 structure as described in this paper is regarded as a social innovation.

4 The described network structure has three goals:

- 5 1. sustainability: profits will be invested in sustainable projects on the local level.
- 6 2. regional economy: profits are kept in the region, while stimulating innovation.
- 7 3. democracy: governance of energy and related financial resources is organised on a
8 democratic basis.

9
10 Relating this innovation to Sagebiel⁵⁰, who points to the willingness-to-pay for sustainable energy
11 from cooperatives, we expect that there is considerable scope for these networks to be
12 successful. Relating to Parag²⁷, Hargreaves¹⁷ and Seyfang³³, we observe a dynamic field of
13 networks that are in constant development. In the described networks there is a strong and widely
14 held common vision, which is an important factor for success, as argued in Schoor&Scholtens²³.

15
16 The energy cooperations require considerable time and effort of its volunteers. Local and
17 provincial networks have absolute priority in their daily business. Therefore, few people can afford
18 to spend much time on national networks, although informants find these useful for lobbying and
19 information sharing.

20
21 *Community energy, what should it mean?* asks Gordon Walker in his article ³⁵. On the basis of
22 our study, we conclude that among other things it means a close relationship with regional culture
23 and a specific mentality. The networks all refer to the mentality in their region as important for the
24 best approach. In their communication all networks use regional language to connect to people
25 living in the region. In Friesland this is quite common, as Frisian is the second official language in
26 the Netherlands, but also in Groningen and Drenthe local expressions are used. This conveys
27 regional pride, where people for example first see themselves as Frisians, and secondly as
28 Dutch.

29
30 Another manifestation of the desire to align with the region is that these networks are organized
31 along provincial boundaries in the first place. This is not self-evident, because in Dutch national
32 political circles the relevance of provinces and their boundaries are often challenged.
33 Furthermore, the networks hold the explicit view that the energy provider NLD should be limited to
34 the three northern provinces, to remain close to local networks and people.

35
36 The network has been put in place and, hence, the next challenge of the local cooperatives is to
37 attract enough members and clients to the new energy provider to sustain the business model.
38 Many local cooperatives have enough on their hands, struggling to involving enough people to
39 continue, and fully dependent on volunteers. The outreach of local cooperatives to the wider
40 population in the community is repeatedly voiced as a challenge.

41
42 The new networks still have to find their niche, to further develop relations with the existing
43 networks and institutions. On the one hand, the new networks want to develop good working
44 relations 'for the common good'. On the other hand, there are opinions that government money is
45 now channelled to traditional organisations, which in their view not always take the best approach
46 or have the necessary knowledge to service the local cooperatives in the best possible way.

47
48 The case study presented here provides no more than a snapshot of a dynamic cluster of
49 interlinking networks. To expand this work several approaches are feasible, such as a social
50 network analysis of emerging energy networks in a wider area.

Further research into processes of transformation of the fossil energy system has to take questions of governance into account. In the community energy movement there is increasing interest in technological solutions, such as local capacity for energy storage, smart metering, or smart grids. Large production facilities such as solar parks are just starting to emerge with the first project on Ameland (one of the Frisian isles). Therefore, research into user innovation⁵¹ in relation to community energy could take developments in the new energy networks on board.

In the vision of the community energy movement, active participation in larger projects as well as experiments with cooperative network companies could be the next step on the road to a decentralized and decarbonized energy system.

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